Interim Progress Report Submitted to
NOAA's Human Dimensions of Global Change Research (HDGCR) Program

Project Title: Development of Climate Forecasts Decision Making Teaching Materials for Junior High School Teachers and Students

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## I. Preliminary Materials

### A. Project Abstract

Development and testing of teaching material on the proper use of probabilistic forecasts in decision making for junior high school students is the focus of the proposed study. Application of climate forecasts provides a unique opportunity to integrate probabilistic decision making into different subject matter. Objectives of the study include development of materials, which junior high school teachers can use, improved knowledge concerning climate forecasts and their use by the students, and improved comprehension and inference making by the students. Environmental education materials, including climate related material, developed for grade levels K-12 have focus almost exclusively on the physical sciences. Little to no materials have been developed concerning the social science aspects of environmental issues. This research is a start toward filling this gap in the development of education material.

### B. Objectives of Research Project

The objectives of the proposed project are directed towards both teachers and students at the junior high level. Development of instructional material and education of teachers to incorporate probabilistic information into the decision-making process is the primary objective directed towards teachers. Two primary objectives are directed towards students. The first is improving the ability to understand and use probabilistic climate forecasts. Improving students' ability to comprehend subject matter, make inferences concerning decision-making, and develop the ability to use probabilistic information is the second objective directed towards students. These objectives will be met through developing, testing, and disseminating units of instruction. The units of instruction will focus on use of probabilistic information in decision-making processes with climate forecasts as the learning context. The proposed study will be a pilot project in nature, focusing on junior high students in rural school districts in Texas. Knowledge gained and units of instruction developed will, however, be made available for wider dissemination.

C. Approach

The methodology consists of the following components. Although listed sequentially, several of the components are being conducted simultaneously.

Interaction with Teachers
Student Focus Groups
Pre- and Post-testing of Students
Development of Units of Instruction
Revision of Units of Instruction
Delivery, Technology, and Dissemination

D. Matching Funds

None

II. Interactions

We have been meeting regularly with 6$^{th}$ grade teachers in College Station. This interaction will expand to other schools once the school year ends. One teacher has promised us two weeks of class time to present climate and climate forecast materials.

We have been in contact with John Kermond. He has been very helpful and provided excellent background material. We hope to be able to incorporate pre-existing material into the instructional material. There is no reason to reinvent the wheel.

III. Accomplishments

We have started a literature review. After reviewing the literature, we have narrowed (although not limited to) the literature review to include studies examining teaching probability / inference to grade school age students. Narrowing the review has helped in focusing the review and keeping the review manageable. We also been collected question content and format from previous studies used to measure a student's ability to make inferences. The Texas and National Education Standards have been cross-referenced with our ideas concerning teaching climate forecasts. Our proposed ideas closely tie to these standards.

A website for the project has been developed. This website will be used to facilitate interaction between the teachers and project personnel during the project. The website will be modified to communicate results at the end of the project. Several different ideas have been developed into prototype learning modules. These modules will provide the basis for the project.

Because we did not receive the funding until the end of the summer, the project has been progressing slower than anticipated. We lost two school districts, Hearne and Calvert. Summerville is still working with us. To compensate for the loss of Hearne and Calvert, we have added the sixth grade science teachers at Cyprus Grove School in the College Station School District. We are currently meeting with the teachers so testing of the modules on students can start this fall.

## IV. Relevance to the field of human-environmental interactions

This project is unique in that 1) it does not address correct decision makers, rather potential future decision makers, and 2) it does not fit cleanly into any of the specific areas of study. However, the project may have long run implications for these areas of study. If successful, improving the ability of junior high school students to use probabilistic decision making concepts will in the future improve the use of climate information.

The project also helps fills a gap in the instructional material. Few materials have been developed concerning the social science aspects of environmental issues. This study is a start toward filling this gap in the development of education material. What is important is material that can be use in the classroom that fits in with the classroom material and national standards.

## V. Graphics

None at this point.

## VI. Website Address

http://readintosh.tamu.edu/DecisionMaking/Index.htm